embodiment of FIG. 4, the flexible connection is obtained by means of a conduit forming a bellows 43 over at least one portion of its length. This contributes to isolating the nozzle 9 from the push button even more, which considerably reduces the stresses exerted on the nozzle 9 when the push button 34 is actuated. The embodiment of FIG. 4 is, in other respects, identical at all points with the embodiment of FIGS. 2 and 3A–3B.

The outlet nozzle 9 disposed inside a housing 44 extending the flexible conduit 41 is held fixed in position at the bottom of the cutout 42 by means of a tab 45 carried by the annular body 46 of a protective element 47. The annular body is made, for example, of polypropylene and has a profile which overall follows the profile of the edge of the upper end 35 of the body 10. The opening delimited by the upper edge of the annular body 46 is obturated by a flexible membrane 7 positioned opposite the push button 34. The flexible membrane is advantageously made of SEBS and may be made by duplicate injection molding with the polypropylene body. During assembly, the protective element is positioned on the upper end 35 of the body 10, the internal diameter of the annular body 46 being slightly greater than the external diameter of the body 10. The tab 45 comes to bear on the upper part of the housing 44 containing the nozzle 9 which is thus fixed in position. The fixed hold of the housing 44, and hence of the nozzle 9, can be improved by providing, on the internal side of the upper space 13, an extra thickness in alignment with the bottom of the cutout 42, so as to ensure a better positioning of the housing 44.

The unit thus described is intended to be mounted inside an outer shell 2 made of aluminium for example. As has been mentioned with reference to FIG. 1, the top 5 of the outer shell 2 has a cutout with a profile similar to the cutout of the upper end 35 of the body 10, as well as the cutout formed by the upper edge of the annular body of the protective element 47. The shape of the cutout 6 in the outer shell 2 is such that it substantially coincides with the flexible membrane 7 of the protective element 47.

The assembly of the unit is obtained as follows. The pump is first mounted in the opening 29; the body 10 is upended and is filled via the bottom through the opening 22 which is subsequently obturated by the stopper 24; the push button 34, including the flexible conduit 41 and the outlet nozzle 9 inside the housing 44, is mounted on the outlet stem 33 of the pump; the protective element 47 is positioned on the upper end 35 of the body; the outer shell is subsequently fitted on the unit, marking means, (of an axial groove-type) ensuring a proper angular positioning of the body relative to the outer shell 2. The body 10 has a size slightly increasing in the direction towards its bottom end 14, so that at least in the vicinity of its bottom end 14, the body is held tight inside the outer shell 2. In the assembled position, as is clearly shown in FIGS. 3A and 3B, the bottom edge of the protective element 47 is held between the external side of the body 10 and the internal side of the shell 2. The device is then ready for use.

Alternatively, it is possible to mount the protective element on its own in the shell 2 via the cutout 6, and then mount the body of the device inside the shell.

In the preceding detailed description, reference has been made to preferred modes of embodiment of the invention. It is obvious that variants may be introduced into them without departing from the scope of the invention, such as claimed below.

I claim:

1. A unit for packaging and dispensing a liquid or semi-liquid product, comprising:

a body forming a reservoir for the product and having a fixed portion surmounting the reservoir;

a pump surmounting the reservoir;

an actuating element mounted for actuating the pump; and

a product outlet element having at least one opening and connected to the pump by a conduit forming a flexible connection, wherein the outlet element is held substantially immovably in position on the fixed portion of the body, and wherein the actuating element is mounted independent of said fixed portion of the body, wherein the body has a transverse partition separating a first space defining said reservoir from a second space surmounting the first space, said second space containing said pump mounted in said partition, the actuating element mounted on said pump, the outlet element and the conduit forming the flexible connection, wherein the second space has an end opposite said partition, further comprising a protective element closing said end, wherein at least one portion of said protective element is engagable with the actuating element and is formed by a flexible material to permit actuating said actuating element through said protective element.

2. A packaging and dispensing unit according to claim 1, further comprising an outer shell covering said unit substantially over its whole height, wherein the protective element has a body in the form of a rigid or semi-rigid annular part, said protective element being held on the end of the second space via said outer shell, further comprising an opening in said outer shell at a location corresponding to the outlet element, wherein the outer shell has a top with a cutout aligned with the actuating element.

3. A packaging and dispensing unit according to claim 2, further comprising marking elements on at least one of the outer shell and the body to permit proper angular positioning of the outer shell relative to the body.

4. A packaging and dispensing unit according to claim 2, wherein the rigid or semi-rigid annular part of the protective element has a tab portion including a free end bearing on the outlet nozzle so as to fix the latter at a bottom of the cutout in the second space.

5. A packaging and dispensing unit according to claim 2, wherein the shell is self-tightening on the body of the unit, at least in a vicinity of an end of the first space opposite the partition.

6. A packaging and dispensing unit according to claim 1, wherein the protective element is formed by duplicate injection molding two compatible materials, a first rigid or semi-rigid material forming the annular part, a second flexible material forming the portion engagable with the actuating element.

7. A packaging and dispensing unit according to claim 6, wherein the first material is one of a polypropylene (PP) and a high density polyethylene (HDPE), and wherein the second material consisting of SEBS.

8. A unit for packaging and dispensing a liquid or semi-liquid product, comprising:

a body forming a reservoir for the product and having a fixed portion surmounting the reservoir;

a pump surmounting the reservoir;

an actuating element mounted for actuating the pump; and

a product outlet element having at least one opening and connected to the actuating element by a conduit forming a flexible connection, wherein the outlet element is held substantially immovably in position on the fixed

portion of the body, wherein the pump is offset relative to an axis of the body and in a direction such that an axis of the pump is farther from the product outlet element than is the axis of the body.

9. A packaging and dispensing unit according to claim **8**, wherein the outlet element comprises a nozzle for spraying a liquid product.

10. A packaging and dispensing unit according to claim **8**, wherein the body has a transverse partition separating a first space defining said reservoir from a second space surmounting the first space, said second space containing said pump mounted in said partition, the actuating element mounted on said pump, the outlet element and the conduit forming the flexible connection.

11. A packaging dispensing unit according to claim **10**, wherein the first space has an end opposite to said partition, further comprising an attacked bottom sealingly mounted to said end.

12. A packaging and dispensing unit according to claim **10**, wherein said actuating element has an internal duct opening to the conduit forming said flexible connection, wherein the pump includes an intake tube opening inside the first space and a hollow outlet stem, the hollow outlet stem having a flexible end opening in the second space, and the actuating element being mounted on the flexible end, and wherein the outlet stem communicates with said internal duct.

13. A packaging and dispensing unit according to claim **12**, wherein the outlet element is situated substantially at the same axial level as said flexible end of the outlet stem.

14. A packaging and dispensing unit according to claim **8**, wherein the conduit forming said flexible connection forms a bellows.

15. A packaging and dispensing unit according to claim **8**, wherein the body is formed of a single piece.

16. A packaging and dispensing unit according to claim **8**, wherein the body is a molded thermoplastic material taken from one of the group consisting of a polypropylene (PP) and polyethylene terephthalate (PET).

17. A packaging and dispensing unit according to claims **8**, wherein the product is one of a pharmaceutical dermo-pharmaceutical and cosmetic product.

18. A unit for packaging and dispensing a liquid or semi-liquid product, comprising:

a body forming a reservoir for the product and having a fixed portion surmounting the reservoir;

a pump surmounting the reservoir;

an actuating element mounted for actuating the pump; and

an outlet nozzle having at least one opening and connected to the pump by a conduit forming a flexible connection, wherein the outlet nozzle is held substantially immovably in position on the fixed portion of the body, wherein the actuating element is mounted independent of said fixed portion of the body, wherein the outlet nozzle is disposed substantially immovably at the bottom of a cutout formed in a side wall of the second space, said cutout opening out on a free edge of the second space situated opposite the transverse partition.

19. A unit for packaging and dispensing a liquid or semi-liquid product, comprising:

a body forming a reservoir for the product and having a fixed portion surmounting the reservoir;

a pump surmounting the reservoir;

an actuating element mounted for actuating the pump; and

a product outlet element having at least one opening and connected to the pump by a conduit forming a flexible connection, wherein the outlet element is held substantially immovably in position on the fixed portion of the body, wherein the actuating element is mounted independent of said fixed portion of the body, wherein the outlet element is mounted inside a housing communicating with the conduit forming the flexible connection, wherein the actuating element, the housing and the flexible conduit form a single molded part.

20. A packaging and dispensing unit according to claim **19**, wherein the actuating element has a pressing surface on which an actuating pressure may be exerted.

21. A packaging and dispensing unit according to claim **19**, wherein the molded part is formed of one of the group consisting of a low density polyethylene (PEBD), and a mixture of low density polyethylene (PEBD)/high density polyethylene (PEHD) wherein a PEHD content is at most equal to 25% of the mixture.

22. A unit for packaging and dispensing a liquid or semi-liquid product, comprising:

a body forming a reservoir for the product and having a fixed portion surmounting the reservoir;

a pump surmounting the reservoir;

an actuating element mounted for actuating the pump; and

a product outlet element having at least one opening and connected to the pump by a conduit forming a flexible connection, wherein the outlet element is held substantially immovably in position on the fixed portion of the body, and wherein the actuating element is mounted independent of said fixed portion of the body, wherein the body has a transverse partition separating a first space defining said reservoir from a second space surmounting the first space, said second space containing said pump mounted in said partition, the actuating element mounted on said pump, the outlet element and the conduit forming the flexible connection, wherein the first space has an end opposite to said partition, further comprising an attached bottom sealingly mounted to said end, wherein the attached bottom has an opening for filling the reservoir, further comprising an obturating element for obturating said opening.

23. A packaging and dispensing unit according to claim **22**, wherein the attached bottom is made of a thermoplastic material chosen from one of polypropylenes (PP), polybutylene terephthalates (PBT) and high density polyethylenes (HDPE).

24. A unit for packaging and dispensing a liquid or semi-liquid product, comprising:

a body forming a reservoir for the product and having a fixed portion surmounting the reservoir;

a pump surmounting the reservoir;

an actuating element mounted for actuating the pump; and

a product outlet element having at least one opening and connected to the pump by a conduit forming a flexible connection, wherein the outlet element is held substantially immovably in position on the fixed portion of the body, and wherein the actuating element is mounted independent of said fixed portion of the body, wherein the body has a transverse partition separating a first space defining said reservoir from a second space surmounting the first space, said second space containing said pump mounted in said partition, the actuating element mounted on said pump, the outlet element and the conduit forming the flexible connection, wherein the first space has an end opposite to said partition, further comprising an attached bottom sealingly mounted to said end, wherein said attached bottom forms at least two axially offset sealing zones.

25. A packaging and dispensing unit according to claim 24, wherein said at least two sealing zones comprise a first sealing zone formed by at least one catch engagement bead, and a second sealing zone formed by a self-tightening mounting.

26. A packaging and dispensing unit according to claim 25, further comprising a third sealing zone between the first and second sealing zones, said third sealing zone comprising an O-ring disposed at a bottom of a groove in a side wall of the attached bottom.

27. A packaging and dispensing unit according to claim 26, wherein the O-ring is made of one of butyl and EPDM.

28. A unit for packaging and dispensing a liquid or semi-liquid product, comprising:

a body forming a reservoir for the product and having a fixed portion surmounting the reservoir;

a pump surmounting the reservoir;

an actuating element mounted for actuating the pump; and

a product outlet element having at least one opening and connected to the actuating element by a conduit forming a flexible connection, wherein the outlet element is held substantially immovably in position on the fixed portion of the body, wherein the actuating element is

mounted to the pump independent of said fixed portion of the body, and wherein the pump is offset relative to an axis of the body and in a direction such that an axis of the pump is farther from the product outlet element than is the axis of the body.

29. A unit for packaging and dispensing a liquid or semi-liquid product, comprising:

a body forming a reservoir for the product and having a fixed portion surmounting the reservoir;

a pump surmounting the reservoir;

an actuating element mounted for actuating the pump; and

a product outlet element having at least one opening and connected to the actuating element by a conduit forming a flexible connection, wherein the outlet element is held substantially immovably in position on the fixed portion of the body, wherein the actuating element, upon actuation of the pump, moves axially with respect to said fixed portion of the body, and wherein the pump is offset relative to an axis of the body and in a direction such that an axis of the pump is farther from the product outlet element than is the axis of the body.

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